

REMARKS

Reconsideration of this application is requested. A new Abstract has been provided, as suggested in the Action. The list of related applications in the specification has been updated. Claims 6, 9 and 16 have been amended to overcome the objection as to informalities. Further, the rejection of claims 1 to 8 and 20 as being indefinite has been overcome by amendment.

The rejection of claims 1 to 6, 9 to 14 and 17 as being anticipated by Laskaris et al '168 (US Pat. 5,548,168) is traversed. Independent claims 1, 9 and 17 have been amended to define the vacuum vessel as a three sided chamber having a top plate and a pair of sidewalls that straddle the superconducting coil of the rotor. The sidewalls of the vacuum chamber are in sealing engagement with the rotor core. Further, the independent claims have been amended to make clear that sides of the coil extend radially outward of the rotor core.

Laskaris et al '168 discloses a coil that is recessed in a slot in the core and a cylindrical vacuum encircles the entire rotor core and the recessed coil. The rotor disclosed in Laskaris et al '168 differs from the amended independent claims at least with respect to: (a) the claimed coil side extending radially outward of the rotor core, and (b) the vacuum housing having a top plate and sidewalls that enclose the coil side on multiple sides, and the sidewalls are sealed to the rotor core. Further, Laskaris et al '168 does not disclose a rotor core have a planer section from which extends radially the coil and vacuum housing, as is recited in claims 2 and 6; a rectangular cross-section to the vacuum housing, as is recited in claim 9; the housing is sealed to the core on both sides of

the coil, as is recited in claim 11; and slots in the rotor core to receive the sidewalls of the vacuum housing, as is recited in claim 13. In view of these differences between the claimed invention and the rotor disclosed in Laskaris et al '168, the rejection for anticipation should be withdrawn.

The rejection of dependent claim 7 as being obvious over Laskaris et al '168 in view of Khutoretsky (US Pat. 4,820,945) is traversed for the same reasons as stated above with respect to Laskaris et al '168 and claim 1. In addition, Khutoretsky does not suggest a vacuum housing with three sides or a coil that extend radially outward of the rotor core. The combination of Laskaris et al '168 and Khutoretsky does not suggest the claimed invention and the rejection should be withdrawn.

The rejection of dependent claims 8, 15 and 16 as being obvious over Laskaris et al '168 in view of Laskaris '997 (US Pat. 4,291,997) is traversed for the same reasons as stated above with respect to Laskaris et al '168 and claims 1 and 9. In addition, the side wall braces recited in these claims are not rendered obvious by the Laskaris '997 which does not disclose any side wall brace for a rotor core. The combination of Laskaris et al '168 and Laskaris '997 does not suggest the claimed invention and the rejection should be withdrawn.

The rejection of dependent claims 18 to 20 as being obvious over Laskaris et al '168 in view of Shoykhet (US Pat. 5,880,547) is traversed for the same reasons as stated above with respect to Laskaris et al '168 and claim 17. Further and contrary to the Action, Shoykhet does not disclose the same vacuum housing as is recited in independent claim

17. The combination of Laskaris et al '168 and Shoykhet does not suggest the claimed invention and the rejection should be withdrawn.

The rejection of dependent claims 18 to 20 as being obvious over Laskaris et al '168 in view of Borden (US Pat. 4,554,731) is traversed for the same reasons as stated above with respect to Laskaris et al '168 and claim 17. In addition, Borden discloses a cylindrical electromagnetic shield that is split in two half sections. There is no teaching in Borden to form the vacuum housing that is the subject of amended claim 17. The combination of Laskaris et al '168 and Borden does not suggest the claimed invention and the rejection should be withdrawn.

The rejection of dependent claim 23 as being obvious over Laskaris et al '168 in view of Shoykhet and Laskaris '997 is traversed for the same reasons as stated above. These references even when combined do not disclose or suggest the three sided vacuum housing of independent claim 17 and do not suggest the braces for the housing that are recited in claim 23. The combination of Laskaris et al '168, Shoykhet and Laskaris '997 does not suggest the claimed invention and the rejection should be withdrawn.

All claims are in good condition for allowance. If any small matter remains outstanding, the Examiner is requested to telephone the undersigned. Prompt reconsideration and allowance of this application is requested.

WANG et al
Serial No. 09/854,937

Attached hereto is a marked-up version of the changes made to the specification and claim(s) by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

[0002] U.S. Patent Application Serial No. [___/___,___] 09/854,982 entitled
“Superconducting Synchronous Machine Having Rotor And A Plurality Of Super-
Conducting Field Coil Windings”, filed May 15, 2001 (atty. dkt. 839-1004);

[0003] INTENTIONALLY LEFT BLANK – DELETED IN ITS ENTIRETY

[0004] U.S. Patent Application Serial No. [___/___,___] 09/854,933 entitled “High
Temperature Super-Conducting Rotor Coil Support With Split Coil Housing And
Assembly Method”, filed May 15, 2001 (atty. dkt. 839-1006);

[0005] U.S. Patent Application Serial No. [___/___,___] 09/854,931 entitled
”Synchronous Machine Having Cryogenic Gas Transfer Coupling To Rotor With Super-
Conducting Coils”, filed May 15, 2001 (atty. dkt. 839-1007);

[0006] U.S. Patent Application Serial No. [___/___,___] 09/855,026 entitled “High
Temperature Super-Conducting Synchronous Rotor Coil Support With Tension Rods
And Method For Assembly Of Coil Support”, filed May 15, 2001 (atty. dkt. 839-1008);

[0007] U.S. Patent Application Serial No. [___/___,___] 09/854,946 entitled “High
Temperature Super-Conducting Rotor Coil Support With Tension Rods And Bolts And
Assembly Method”, filed May 15, 2001 (atty. dkt. 839-1009);

[0008] U.S. Patent Application Serial No. [___/___,___] 09/854,939 entitled “High
Temperature Super-Conducting Coils Supported By An Iron Core Rotor”, filed May 15,
2001 (atty. dkt. 839-1010);

[0009] U.S. Patent Application Serial No. [___/___,___] 09/854,938 entitled “High Temperature Super-Conducting Synchronous Rotor Having An Electromagnetic Shield And Method For Assembly”, filed May 15, 2001 (atty. dkt. 839-1011);

[0010] U.S. Patent Application Serial No. [___/___,___] 09/854,940 entitled “High Temperature Super-Conducting Rotor Coil Support And Coil Support Method”, filed May 15, 2001 (atty. dkt. 839-1012);

[0011] U.S. Patent Application Serial No. [___/___,___] 09/854,944 entitled “A High Power Density Super-Conducting Electric Machine”, filed May 15, 2001 (atty. dkt. 839-1019);

[0012] U.S. Patent Application Serial No. [___/___,___] 09/854,943 entitled “Cryogenic Cooling System For Rotor Having A High Temperature Super-Conducting Field Winding”, filed May 15, 2001 (atty. dkt. 839-1062);

[0013] U.S. Patent Application Serial No. [___/___,___] 09/854,464 entitled “High Temperature Super-Conducting Racetrack Coil”, filed May 15, 2001 (atty. dkt. 839-1063); and

[0014] U.S. Patent Application Serial No. [___/___,___] 09/855,034 entitled “High Temperature Super Conducting Rotor Power Leads”, filed May 15, 2001 (atty. dkt. 839-1064).

IN THE CLAIMS

1. (Amended) In a synchronous machine a rotor comprising:

a rotor core;

a super-conducting coil mounted on said rotor core and said coil having at least one coil side section extending along a side of the rotor core and radially outward of the side of the rotor core;

a vacuum housing [covering at least one of said coil side sections] straddling the at least one coil side section, wherein the vacuum housing further comprises a top plate and a pair of opposite sidewalls such that the at least one coil side section is enclosed on three sides by the vacuum housing, and further the sidewalls are in sealing engagement with the side of the rotor core, and

a conductive shield extending over said vacuum housing and coil side sections.

2. (Amended) In a rotor as in claim 1 wherein said vacuum housing is a channel housing extending longitudinally along said side of said rotor core, wherein said side is a planar section of the core and said coil side section and vacuum housing extend radially outward of said planar section.

6. (Amended) In a rotor as in claim 1 further comprising a planar surface extending longitudinally across the rotor core, wherein the at least one of [said] coil side section[s] is adjacent the planar surface and extends radially outward of said planar surface], and said vacuum housing straddles the one of said side sections, and the side section is sealed to the planer surface].

8. (Amended) In a rotor as in claim 1 further comprising a plurality of braces buttressing the sidewalls of the vacuum housing and conductive shield.

9. (Amended) A rotor comprising:

a rotor core having an axis;

an end shaft [[note: why just “an” end shaft, i.e. a “single”? Compare with claim 17]] extending axially from an end of said core, wherein said end shaft has a slot adjacent the core end;

a super-conducting rotor coil having at least one coil side parallel to the core axis and at least one coil end transverse to said core axis, wherein said coil end extends through said slot in the end shaft and said coil side extends radially outward of said rotor core;

a vacuum housing over said coil side and seal with said slot to define a vacuum region around said coil, wherein said vacuum housing has a rectangular cross-section and further comprises a top plate and a pair of opposite sidewalls such that the coil side is enclosed on a plurality of sides by the vacuum housing, and further the sidewalls are in sealing engagement with the rotor core.

11. (Amended) A rotor as in claim 9 wherein said vacuum housing is [a channel straddling said coil side and] sealed to said rotor core on both sides of said coil side.

12. (Amended) A rotor as in claim 11 wherein [said vacuum housing comprises side-walls on either side of said coil side, and] each side wall is sealed to a surface of the rotor core along an entire length of the rotor core.

15. (Amended) A rotor as in claim 9 further comprising a plurality of braces adjacent] buttressing said sidewalls of the vacuum housing and attached to said rotor core.

16. (Amended) A rotor as in claim 15 further comprising an electromagnetic shield [() around [supported by] said braces.

17. (Amended) A rotor comprising:

a rotor core having an axis;

a pair of end shafts extending axially from opposite ends of said core, wherein said end shafts each have a slot adjacent the core end;

a super-conducting rotor coil having at least one coil side section parallel to the core axis and adjacent opposite sides of said core, and said coil having coil end sections transverse to said core axis and adjacent the ends of said core, wherein said coil end sections each extend through one of said slots in the end shafts and said coil side section extends radially outward of said rotor core;

a vacuum housing over each said coil side sections and having ends each being sealed to one of slots, wherein said vacuum housing further comprises a top plate and a pair of opposite sidewalls such that the coil side is enclosed on a plurality of sides by the vacuum housing, and further the opposite sidewalls are in sealing engagement with the rotor core, and

a vacuum region around said coil defined by [said] the slot in said pair of end shafts and the vacuum housing over each of said coil side sections.

18. (Amended) A rotor as in claim 17 further comprising a conductive shield over said coil side sections and overlapping with said end shafts, such that the shield is sealed to the end shafts.

20. (Amended) A rotor as in claim 18 wherein said shield is formed partially by
a top portion said vacuum housing.